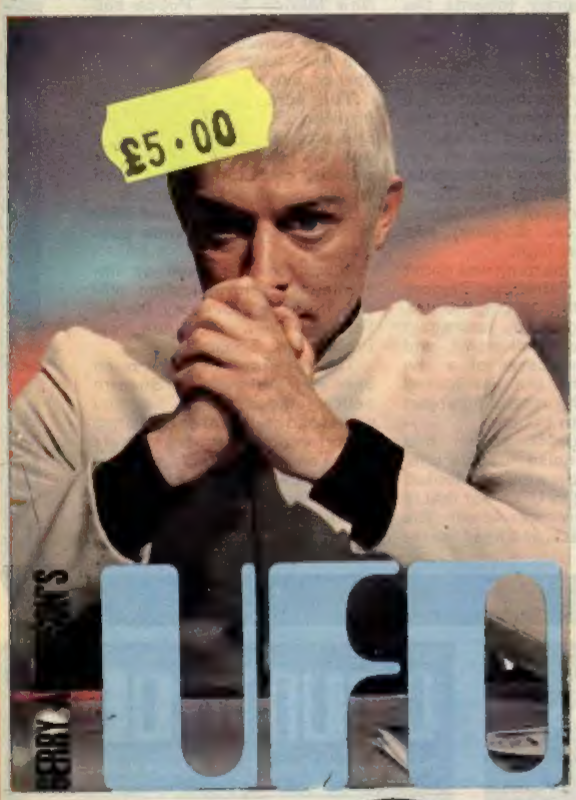
ISSUE No. 28 Week ending July 3, 1971

countdown

The space age comic!

INSIDE! Part 2 of our Super Space Poster!

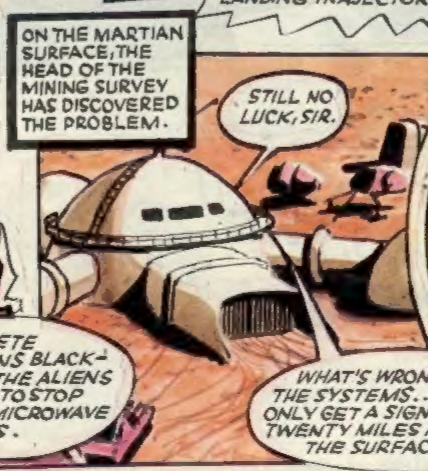
The Force Field



MOONBASE...
SOMETHING IS BLOCKING OUR TRACKING BEAMS, COMMANDER!
WE'VE GOT TO FIND OUT WHAT THE ALIENS ARE UP TO. GET ME THE LAST KNOWN LANDING TRAJECTORY...

AT SHADO H.Q. SECONDS LATER...
THE COMPUTER SAYS IT'S MARS, ED.
THERE'S ONLY ONE TARGET THEY CAN BE GOING FOR, ALEC. THE MARTIAN SURVEY TEAM!

AND THERE'S NO WAY OF WARNING THEM.
IT'S A COMPLETE COMMUNICATIONS BLACK-OUT. SOMEHOW THE ALIENS HAVE MANAGED TO STOP ALL LASER AND MICROWAVE SIGNALS.


ON THE MARTIAN SURFACE, THE HEAD OF THE MINING SURVEY HAS DISCOVERED THE PROBLEM.
STILL NO LUCK, SIR.
WHAT'S WRONG WITH THE SYSTEMS... WE CAN ONLY GET A SIGNAL UP TO TWENTY MILES ABOVE THE SURFACE...

Continued on back page!

The UFO and the POLICEMAN

THE small town of Socorro, New Mexico, U.S.A., is situated in the midst of a wasteland of military testing ranges. It was on one of these ranges that a classic observation of a *landed* UFO was made . . . by a police officer.

Patrolman Lonnie Zamora, with five years of service at the Socorro Police Department, was on patrol on April 24, 1964, a fine, windy day with a few clouds, when, at 5.45 p.m., he saw a motorist who seemed to be speeding.

He set off in pursuit in his

ZAMORA'S SKETCH OF THE INSIGNIA THAT HE SAID HE SAW ON THE SIDE OF THE UFO

police patrol car—a white 1964 Pontiac—but the new black Chevrolet kept a good three blocks in front of him.

Suddenly, when he had reached a point on Old Rodeo Street heading out of town, he heard a roar, and saw a flame in the sky to the southwest about a mile away. Zamora's immediate reaction was that a dynamite shack had blown up: he forgot the speeding motorist, who made a lucky escape.

When questioned later Patrolman Zamora said the flame was "bluish, and sort of orange too," and that it was narrower at the top than at the bottom.

He was still driving, but said he did not notice any object above the flame, which was "sort of motionless", yet slowly descending. The sun was to the west, and this did not help his vision with glasses, but he saw that the bottom of the flame was behind a hill. There was no smoke.

Zamora said the roar lasted about ten seconds, and the flame was in view for the same time. He had driven onto a dirt track, and had great difficulty coaxing his car up a steep rocky slope, by which time the noise had ceased.

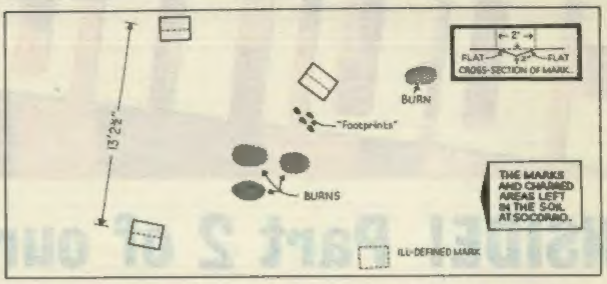
At the top of the mesa he looked around to locate the dynamite shack, and it was then that he saw a shiny object below, to the south, about 150 yards away.

He took this to be an upturned car, although he perceived it to be oval-shaped, with two protrusions below the end nearest him which looked like legs resting on the ground.

In the same swift glance he also saw two people in white "coveralls". They were very close to the object.

As he accelerated towards them, thinking they needed help, he saw one of them look up, and react—and jump—as if startled. They seemed to be "small adults or large kids."

At this point the policeman radioed the sheriff's office to say he was investigating a



possible accident, and that he would be out of his car. Then, as he got out of the car, and hooked up the microphone which he'd dropped, he heard three loud "thumps" which made him turn quickly towards the "accident."

Right out of the blue there was another loud roar, starting on a low note and rising to a higher one, and the startled patrolman saw a bright flame under the object, which started to rise.

In this brief moment of observation, he saw a red insignia, or lettering, on the aluminium-coloured side of the object. This sign (see diagram) was about two feet high.

Afraid that the thing was about to explode, Patrolman Zamora turned and ran, struck the car, fell down, got up, ran again with his head well down, and dived for the cover of a low ridge. As he ran, he looked back to see the ascending object now level with the car.

Then, once in shelter and hearing the noise subside until it became a low whine, he looked up and saw the UFO—for that is what it now was—clear the dynamite shack, and head noiselessly and quickly downrange.

Returning to his radio, Zamora alerted the despatcher to look out, but that officer was on the wrong side of the building.

However, Sgt. Chavez of the New Mexico State Police had overheard Zamora's earlier call, and now arrived on the scene to find the latter ghastly white, shaken, and sweating profusely.

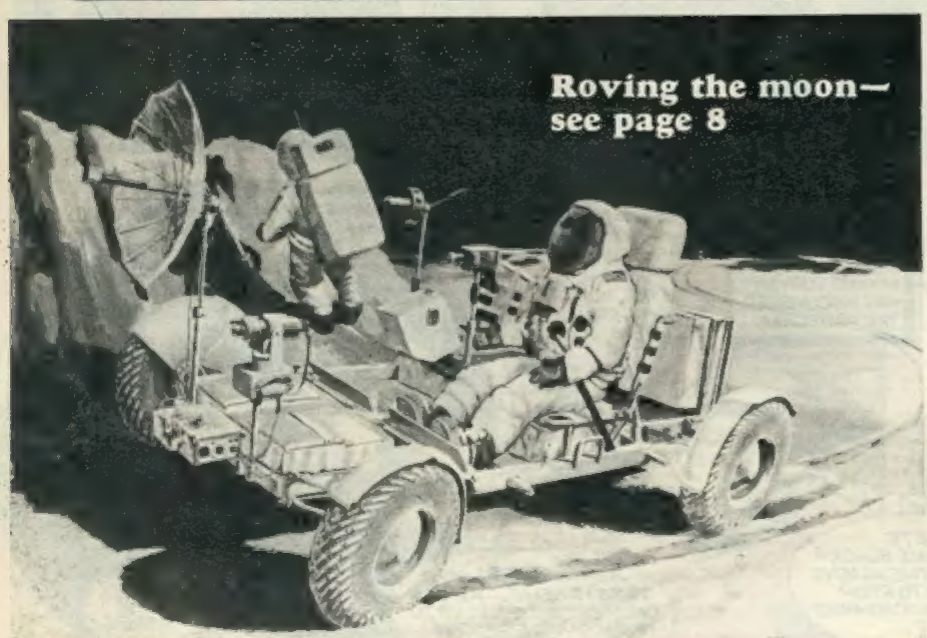
The sergeant saw bushes burning down in the arroyo, and after Zamora had gasped out his story, Sgt. Chavez pointed out marks in the soil where the object had stood.

The report of the landed UFO at Socorro attracted wide publicity.

It was also followed up immediately by investigating officers from the U.S. Army, the Air Force (Kirtland AFB), and from Project Blue Book.

The Air Force verdict was an open one: the events the Socorro police officer stated he had witnessed could not be explained in conventional terms, any more than can the hundreds of other world-wide reports of landed "craft" and "operators" which *Flying Saucer Review* has put on record.

● By Charles Bowen Editor of Flying Saucer Review



countdown

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HANNA-BARBERA'S

DASTARDLY AND MUTTLEY

KLUNK'S MOON ROCKET IS READY FOR TESTING. NOW ALL WE NEED IS AN INTREPID ASTRONAUT.

SAY NO MORE. THE DARE-DEVIL MUTTLEY IS OUR MAN... I MEAN DOG.

STOP TREMBLING, YOU COWARD. JUST REMEMBER YOU'LL BE THE FIRST MUTT ON THE MOON. YOU'LL GET A MOON MEDAL

BUT WILL I GET BACK TO RECEIVE IT?

MINUTES LATER...

ALL SYSTEMS ARE GO...

COUNTDOWN CONTINUES...4...3...2...1...IGNITION.

WE HAVE IGNITION!

WE HAVE LIFT OFF.

STOP...YOU HAVEN'T TOLD ME HOW TO DRIVE IT!

ROAR

CONTROL B

IF THEY'RE NOT GOING TO TELL ME, I'LL HAVE TO GUESS.

BUT THEN...

WHOOSH

POOR MUTTLEY!

GI-DOINK, ROCKET!

CRATER PARK FILM STUDIOS

PAY IN →

FROM THE WRECKAGE OF THE ROCKET...

I MADE IT! KLUNK'S ROCKET SURE IS FAST!

A SMALL STEP FORWARD FOR A GREAT DANE BUT A HUGE LEAP FOR A PEKINESE. HALLO, A MOON CREATURE.

MOON PARK BOOK

HALLO, MOON CREATURE, TAKE ME TO YOUR LEADER.

ALIEN! EEEEK!

YOO HOO, WHERE ARE YOU?

HEY, MAC. WHAT GIVES WITH YOU FRIGHTENING FRED HERE?

EEEEEEK!

POW

CUT! HE'S RUINED IT ALL. GRRRR!

MOON MONSTER

AHEM! I'M SORRY TO BOTHER YOU, BUT COULD WE HAVE OUR ROCKET BACK PLEASE?

SHRIEK

WHOP

TAKE YOUR FURRY FRIEND AS WELL, YOU CELLULOID SABOTEURS!

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THUNDERBIRDS

Higher the Tide

Brains takes a month's leave to help an old friend, Barney McBride, test a new chain-reactor tunnel digger in the Arctic. The heat produced by the digger melts part of the ice cap and they fall to the seabed . . .

PUSH TOGETHER... READY... ONE... TWO... THREE... NOW!

IT'S NO USE, IT'S WEDGED TIGHT... CAN'T EVEN REACH THE RADIO CONTROLS...

THERE'S AN AUTOMATIC S.O.S. BEACON ON THE ROOF, BRAINS. IT SHOULD BE TRANSMITTING NOW!

THE DISTRESS SIGNAL IS PICKED UP IN T85 . . .

THUNDERBIRD 5 TO BASE. DISTRESS CALL FROM THE ARCTIC, FATHER. REFERENCE N57 W.

F.A.B.! JOHN!

DID YOU GET THAT REFERENCE, SCOTT?

YES, DAD... IT MAY BE JUST A COINCIDENCE, BUT IT'S ALMOST THE VERY SPOT WHERE BRAINS AND McBRIDE ARE OPERATING.

● ART: DON HARLEY

© 1971 Century 21 M. Ltd.

SECONDS LATER THUNDERBIRDS 1 AND 2 ARE ON THEIR WAY...

HIS SURFACE SURVEY PROVING NEGATIVE, SCOTT SWITCHES TO A SPECIAL DEVICE FOR PENETRATING THE POLAR ICE. FINALLY...

IT'S UNDER THE ICE, VIRGIL...

F.A.B.! SCOTT.

POD AWAY, GORDON... GOOD LUCK.

THANKS, VIRGIL...

SECONDS LATER T84 JETS INTO THE SEA . . .

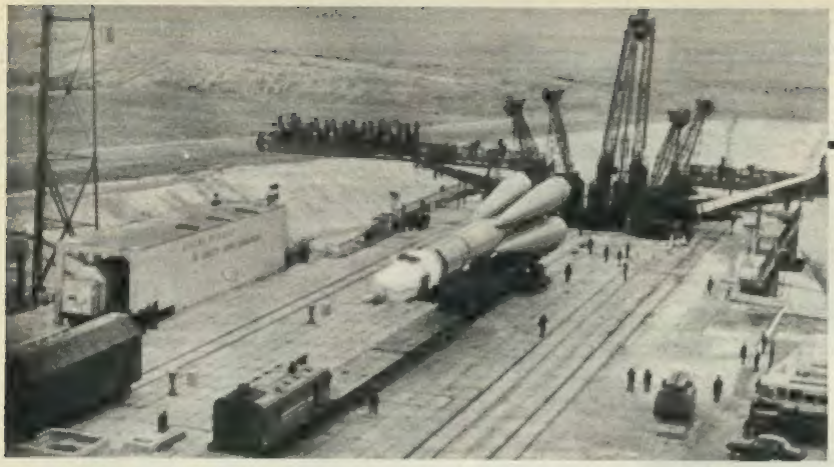
MEANWHILE, SCOTT SETS UP RESCUE CONTROL ON THE ICE TO PIN-POINT THE STRICKEN CRAFT...
YOU'RE NEARLY THERE, GORDON.
THE CURRENTS FANTASTIC, SCOTT... I'M BEING PUSHED ALL OVER THE PLACE!
SOMETHING ELSE IS WRONG, TOO... THE OUTSIDE WATER TEMPERATURE... IT'S ALMOST TROPICAL AND IT'S GETTING WARMER.
I DON'T LIKE THE SOUND OF THIS, GORDON.
AND THEN...
I'VE FOUND THEM, SCOTT... IT'S A TRACKED VEHICLE LYING ON IT'S BACK. THE HEAT IS BEING GENERATED FROM A SORT OF REACTOR CANNON.
IT MUST BE THE TERMITE.
IF BRAINS AND HIS BUDDY ARE STILL ALIVE THEY WOULD HAVE MADE RADIO CONTACT BY NOW. FOLLOW THE USUAL PROCEDURE, GORDON.
F.A.B., SCOTT.
LINE AWAY!
INSIDE THE SUCKER HEAD IS A SMALL BUT POWERFUL TWO-WAY TRANSMITTER...
BRAINS, CAN YOU HEAR ME?
S-SURE, GORDON, LOUD AND CLEAR. WE'RE PINNED TO OUR SEATS BY A CONTROL PANEL. WE CAN'T DO ANYTHING TO HELP.
OVERHEAD VIRGIL AWAITS FURTHER INSTRUCTIONS.
DON'T WORRY, BRAINS. WE'LL HAVE THE TERMITE TO THE SURFACE IN NO TIME! WE'LL NEED POD 6, VIRGIL!
F.A.B., SCOTT. RETURNING TO BASE. WATCH THE WEATHER IT LOOKS NONE TOO HEALTHY.
THE BLIZZARD BREAKS...
F.A.B., VIRGIL... GORDON!
THE WATER TEMPERATURE'S NEARLY A HUNDRED AND FIFTY, SCOTT. IT'S UNBEARABLE IN HERE...
BUT THEN...
THERE'S AN AIR POCKET JUST TWO DEGREES ABOVE YOU. SEE IF YOU CAN FIND IT.
THANKS, SCOTT. WE'LL ALL BE BOILED ALIVE AT THIS RATE.
T84 NO SOONER SURFACES THAN...
WATCH OUT UP TOP, SCOTT. THE ICE-CAP IS DISINTERGRATING ABOVE ME!
THE ICE... IT'S CRACKING!
TB

The Vogan Slaves

Dr. Who has pretended to assist the Vogans in ferrying their new slaves down to the Voganite mines. The Voganite is desperately needed to keep the ancient Vogans alive. Dr. Who knows that if they do not survive their present crisis, the Vogans will destroy their planet. The time traveller has just succeeded in disabling the two Vogan robots but is now racing against time to re-programme them before a rendezvous with the gigantic Vogan Spaceship . . .

ART: HARRY LINDFIELD © 1971 BBC tv

Soyuz meets Salyut



Soyuz 10 arrives at the launch pad (left) on a railway transporter. Three of the four first-stage boosters are clearly visible.

A NEW phase in the Soviet space programme opened on April 19 with the launching into a low Earth orbit of an 'orbital scientific station' called *Salyut* (salute).

Four days later, Colonel Vladimir Shatalov, 43, made it clear that the new space station was named in honour of a famous cosmonaut.

"Ten years ago our fellow-countryman Yuri Gagarin left on the first space flight from this historic cosmodrome," he said, addressing an audience at Tyuratam spaceport.

"Today the ship *Soyuz 10* will continue the important cause of exploring outer space in the interests of science and the national economy. Our crew will carry out an extensive programme of scientific and technical studies and experiments."

Then he and fellow crewmen Dr. Alexei Yeliseyev, 36, and Nikolai Rukavishnikov, 39, ascended to their *Soyuz* capsule.

Lift-off was on time at 2.54 a.m. (Moscow time) and orbit was reached at 3.03 a.m. The capsule's path was several miles higher than *Salyut*, and so course correction would be needed to achieve a rendezvous.

The three men quickly adapted to weightlessness, their pulse rates ranging between 64 and 68 beats per minute.

Two of the crew were on their third trip into space. Both Shatalov and Yeliseyev were teamed up in *Soyuz 4* for the rendezvous and docking with *Soyuz 5*. They flew together again in *Soyuz 8* as part of a group flight of seven cosmonauts.

It was the first flight for Rukavishnikov, who was an engineering designer before becoming a cosmonaut in January 1967.

Rukavishnikov at first reported an unpleasant sensation due to increased blood flow to the head but, with advice from his crewmates, managed to overcome this.

During their second orbit they had breakfast. Rukavishnikov developed a formidable space appetite: for breakfast that day he ate three tins of meat from the reserve stock!

At noon, instructions for the first of three course corrections were radioed to *Soyuz* from the tracking ship *Akademik Sergei Korolev* in the Atlantic Ocean. Shatalov made the correction manually at 1.35 p.m., bringing his ship closer to the orbit of *Salyut*.

The demanding task of rendezvous now lay 12 hours ahead of them and so they slept between 3 p.m. and 11 p.m. while their ship automatically maintained the internal temperature at 21°C and the air pressure at 780 mm. of mercury.

The cosmonauts awoke refreshed and prepared for the critical rendezvous manoeuvres ahead.

They divided up their duties: docking operations were handled by commander Shatalov, flight engineer Yeliseyev monitored the operation of onboard systems, and test engineer Rukavishnikov was responsible for communication with Earth.

The mission plan called for a critical test of *Soyuz*' abilities: rendezvous and docking were to be carried out within one orbit, just 89 minutes. Communications between tracking stations in the U.S.S.R., ships in the Atlantic and *Soyuz 10* were maintained by a *Molniya 1* communications satellite.

To bring *Soyuz* and *Salyut* within docking distance of each other, *Soyuz* made three corrections to its orbit, while *Salyut*, commanded from the ground, made four orbital changes.

During the approach phase their target was first visible some 15 km (9·3 mi.) away. Special light beacons on *Salyut* made detection easier.

The automatic system on board *Soyuz* handled the approach unaided, bringing the two craft smoothly to within 180 metres (590 feet) of each other.

Then Shatalov took over manual control, nursing his 7½-ton spaceship steadily closer to *Salyut* until link-up was achieved at 4.47 a.m. Moscow time. The new docking mechanism worked perfectly first time.

The commander was strictly on his own during this operation because at the time *Soyuz* was out of radio contact with ground stations. While the two craft were docked, there was no attempt by the cosmonauts to enter *Salyut*.

After 5½ hours the two separated and, using television and optical devices, the crew inspected *Salyut* while floating at a distance of several dozen metres.

"A very impressive picture," reported Yeliseyev after the flight. "An object with a tremendous amount of instruments and various antennae in flight."

The two craft continued on independent orbits; by noon *Soyuz* had made 22 orbits of Earth and *Salyut* had made 86.

The cosmonauts rested between 1.30 p.m. and 8 p.m. while *Soyuz* was once again out of radio range from Soviet territory.

After a flight of 30 orbits, *Soyuz* was prepared for the return to earth.

The crew oriented their ship for the critical firing, and switched on the retro engine at 1.59 a.m. The Module containing the retro rocket was then released, to burn up in the atmosphere, while the re-entry capsule was slowed down at a tolerable deceleration rate.

Rukavishnikov noted after the flight that the deceleration of *Soyuz 10* took a fairly long time since the ship is rather heavy.

"We entered the atmosphere at night," he said. "It was dark outside the portholes and suddenly there appeared a blue glow, turning into a rosy colour as though an ultra-violet irradiation lamp had been switched on."

TOUCHDOWN

Parachutes were deployed at about 10 kilometres (33,000 feet) and the final impact on the ground was softened by landing retro-rockets ignited just one metre above ground.

Touchdown came at 2.40 a.m., April 25, right in the target area 120 km. (75 mi.) north-west of Karaganda, Kazakhstan. A crowd of recovery personnel, reporters and friends welcomed the three cosmonauts back to Earth.

In a press conference held after the landing, Colonel Shatalov said their flight was another step along the road to creating orbital research stations.

"We were instructed to perform comprehensive trials of the modified *Soyuz 10* ship jointly with the *Salyut* station."

Shatalov said one of his most important tasks was testing the new system of "searching for, detecting and approaching an unmanned object and a new system of docking and disengaging with it."

He said he was satisfied with the results, but did not elaborate.

After *Soyuz 10* landed, the *Salyut* station remained in a low Earth orbit at an altitude where there are still traces of atmosphere that would gradually slow the station down by friction until, after perhaps two weeks, it would enter the denser layers and burn up.

To lessen the drag from the atmosphere, a rocket engine on board was fired to increase the altitude to a minimum of 251 km. (156 mi.).

Salyut continued on its flight, completing 184 orbits by 1 p.m. April 30, 295 orbits by 11 a.m. May 7 and 425 orbits by 1 p.m. May 15. Inside its pressurised instrument compartment, the temperature was reported to be 15°C and the pressure 920 mm. of mercury.

From left, Shatalov, Yeliseyev and Rukavishnikov, during preflight training with a mock-up of the Soyuz 10 re-entry capsule.

Lift-off of *Soyuz 10* (left). No pictures of *Salyut* have been released.

Orbital Elements	Soyuz 10	Salyut			
	April 23	April 19	April 30	May 7	May 15
Perigee (mi)	129	124	156	155	150
Apogee (mi)	153	138	172	167	161
Period (min)	89	88·5	89·6	89·6	89·0
Inclination	51·6°	51·6°	51·6°	51·6°	51·6°

Perigee: lowest height above Earth.
Apogee: greatest height above Earth.
Period: time for a complete revolution.
Inclination: angle the orbit makes with the Equator.
To change Moscow time to B.S.T., subtract two hours.

I'll pay £1 for every letter printed—send in questions on any subject to Think Tank, Polystyle Publications, 382-386 Edgware Rd., London W2.

Robin Hilborn, Assistant Editor

THINK TANK!

Bloodhound

Q *All I know about this photograph is that it is a Bloodhound missile. Could you tell me anything else about it?*

Adam Keelan
London, S.W.16.

A Bloodhound is British Aircraft Corporation's surface-to-air missile capable of destroying high-flying supersonic aircraft up to 50 miles away.

It homes in on its target by radar, at a speed of Mach 2·5 (1,650 mph), and makes the kill with a high explosive warhead.

Bloodhound is 28 feet long, with a wing span of 9 feet. Propulsion is four solid fuel boosters plus two ramjets.

It is in service with Switzerland, Sweden, Australia, Singapore and with Royal Air Force units in the front line of NATO's air defence in West Germany.

Thanks, Adrian

Dear Sir,

In Countdown No. 11 your reply to "Why are planets spherical in shape?" did not appear to answer the question.

You said that a planet is not exactly spherical because of the effect of spinning (centrifugal force), but why is a planet even roughly spherical in shape rather than sausage-shaped or some other shape?

I think the answer has something to do with the fact that a planet started off as a cloud of gas which, under gravitational forces, was pulled inwards to form a molten mass of material. This mass took on a spherical shape because this gives the smallest surface area for the volume of matter.

For the same reason, the forces of surface tension pulling inwards on a small drop or bubble of water cause it to take up a spherical shape.

Adrian M. Queen
Birmingham B42 2EX

Dear Adrian,

Thanks very much for your answer; it is better than mine was.

Your explanation was proved correct by the Apollo 14 astronauts when they were returning from the Moon.

They gave a televised demonstration of the effect of weightlessness on various liquids. This showed that under conditions of no gravity a liquid assumes a spherical shape.

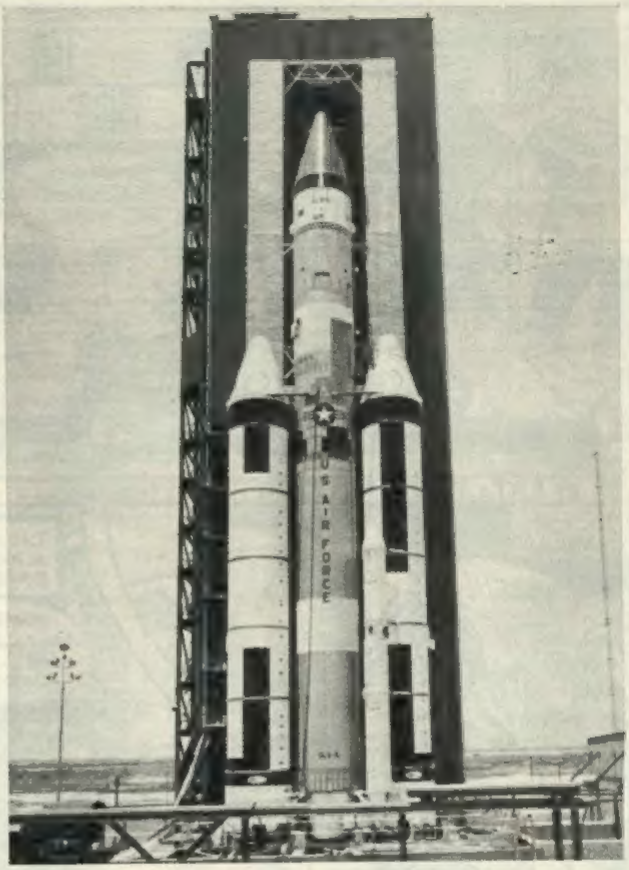
If you poke at the liquid as it floats in front of you, it will break apart into smaller pieces, each of which oscillates like a bit of jelly before settling down into a spherical shape, like a liquid marble.

I wonder if you could have a swimming pool in space which would simply be a great glob of water, say, 20 or 30 feet in diameter, just floating inside a big pressurised cabin.

Then you could dive into one side, go through the middle and come out the other side, all without stopping. Or you could swim in a complete circle, around the circumference of the sphere of water.

One of the rules of the Space Pool would be 'No Splashing', because any water that broke free of the main mass would go flying about the room. If anyone inhaled one of these globules he might drown.

The space pool would be expensive—a 30-ft. sphere of water weighs about 660,000 lbs.—over twice the payload of a Saturn 5.



The Forgotten Two

IN the Planetary Probes chart (issue 15) two Soviet spacecraft that failed enroute to their target planet were inadvertently omitted.

Zond 1 was launched April 2, 1964, and headed for Venus. The probe weighed 1,700 pounds and made two mid-course corrections, at 348,000 miles and 8,700,000 miles from Earth. Communications then apparently failed and no data from Venus was returned. *Zond 1* is now presumed to be in orbit around the sun.

Zond 2 was the loser in a race to Mars with *Mariner 4*. Launched on November 30, 1964, two days after the American probe, *Zond 2* caught up with *Mariner 4* at a distance of 3¼ million miles from Earth.

But then it suffered the same fate as *Mars 1* two years earlier—its orientation mechanism failed and, with its antenna no longer pointing toward earth, all radio contact was lost.

Like *Zond 1*, *Zond 2* is now an artificial planet of the sun.

Titan 3C

The U.S. Air Force's Titan 3C (above) the second most powerful American rocket, is a modified ICBM (Intercontinental Ballistic Missile). First stage thrust is 2,900,000 pounds. The Titan rocket (centre) is similar to the ones used to launch two-man Gemini capsules. Strapped on to the sides are two ten-foot diameter solid-fuel rockets. A booster of at least this power would be needed to launch a Grand Tour probe **(see story on page 2).**

On the far side

Q *Could satellites be put into lunar orbit to keep radio contact with astronauts on the far side of the Moon?*

P. J. Nichol
Stockton, Tees-side.

A This is perfectly possible and is under study both in the United States and in the Soviet Union.

The problem is that radio waves will not penetrate solid rock and since there is no ionosphere around the Moon to reflect radio waves, an astronaut on the side of the Moon facing away from Earth could not communicate with Earth. A communications satellite in lunar orbit is the solution.

Soviet scientists are encountering this problem in their Moon exploration programme. They would like to use Lunokhod vehicles to explore the far side.

To do this, states one of the designers of Lunokhod-1, the vehicle could be operated by sending commands through a relay station in a lunar satellite.

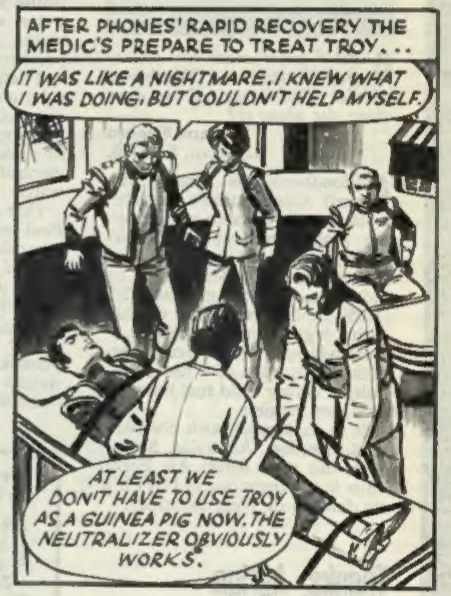
The Earth is really the cause of all the trouble. Our powerful gravitational pull has "captured" the Moon and compelled it to keep one half always facing the Earth.

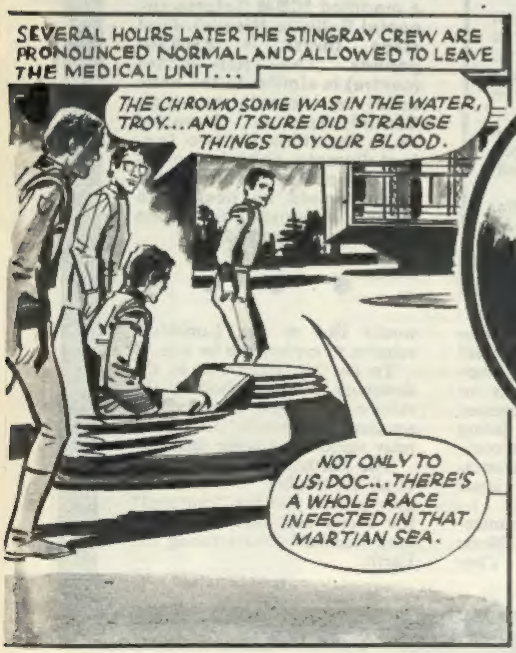
STINGRAY

The Waters of Hyde

Marineville doctors have computed a neutralizer to the mysterious chromosome which turns Troy and Phones into apemen each night. They inject the solution into Troy, who has been captured, when apeman Phones tries a rescue . . .

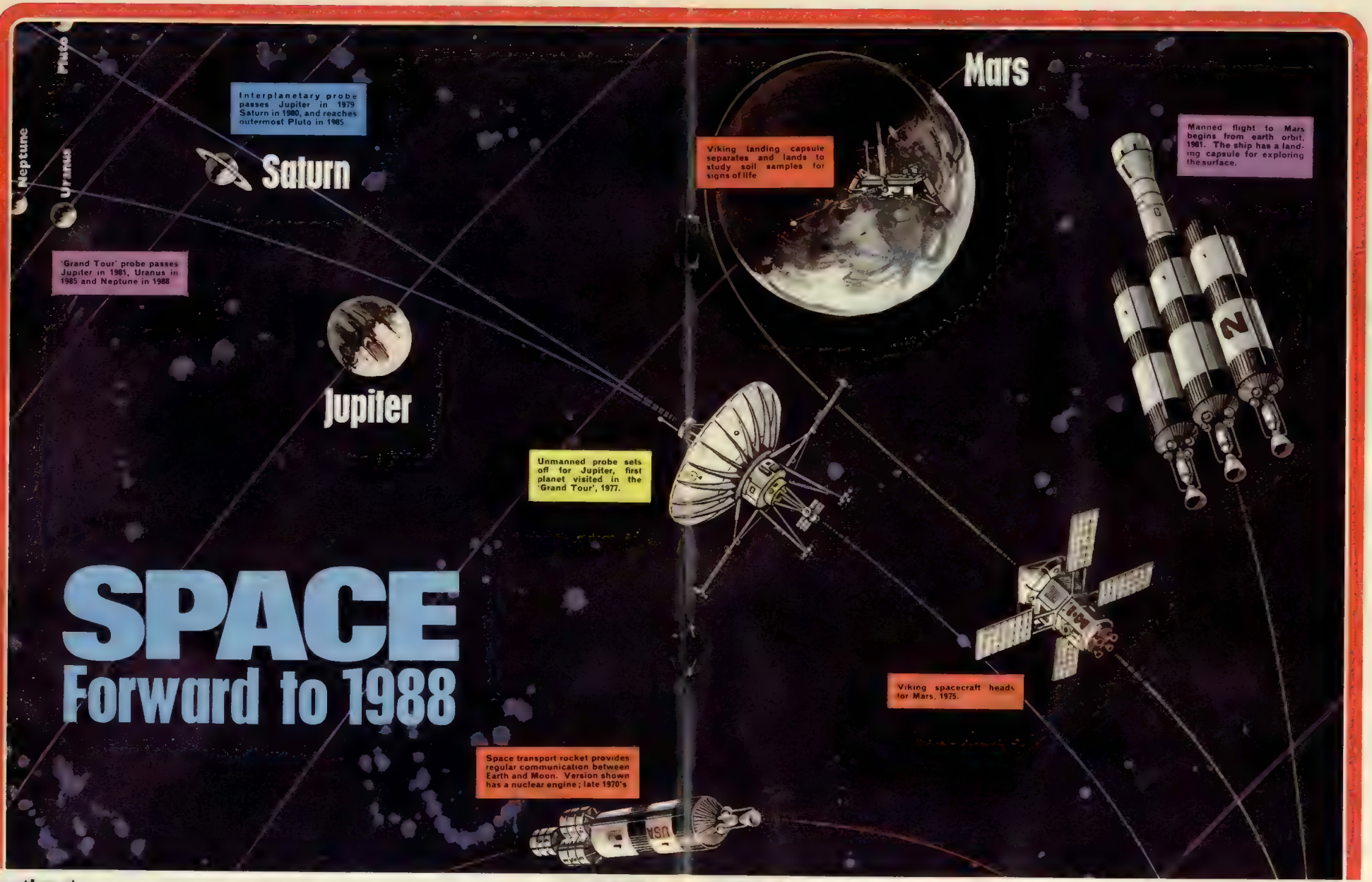
● ART: RAB HAMILTON © 1971 Century 21 M. Ltd.


AFTER PHONES' RAPID RECOVERY THE MEDIC'S PREPARE TO TREAT TROY. . .
IT WAS LIKE A NIGHTMARE. I KNEW WHAT I WAS DOING, BUT COULDN'T HELP MYSELF.
AT LEAST WE DON'T HAVE TO USE TROY AS A GUINEA PIG NOW. THE NEUTRALIZER OBVIOUSLY WORKS.


SEVERAL HOURS LATER THE STINGRAY CREW ARE PRONOUNCED NORMAL AND ALLOWED TO LEAVE THE MEDICAL UNIT. . .
THE CHROMOSOME WAS IN THE WATER, TROY... AND IT SURE DID STRANGE THINGS TO YOUR BLOOD.
NOT ONLY TO US, DOC... THERE'S A WHOLE RACE INFECTED IN THAT MARTIAN SEA.

A FEW DAYS LATER FINDS TROY AND PHONES BACK ON MARS. . .
THAT'S THE LAST OF THE NEUTRALIZER...
FINE... I'LL NEED TEN MEN ARMED WITH THE DART RIFLES...

REMEMBER, MEN, WE WILL NOT BE WELCOME. THEY LOOK UPON THIS THING AS PART OF A RELIGION.
STINGRAY RETURNS TO THE UNDERGROUND SEA...
THIS IS THE SPOT, TROY.
THEY MUST HAVE SPOTTED OUR ARRIVAL... YES, I BELIEVE THE WATER'S GOING DOWN.
THE SEA QUICKLY DRAINS AWAY...
GET THE MARKSMEN ON DECK. WE HAVE TO BE READY FOR THE RECEPTION COMMITTEE.
O.K., TROY.
AS THE ROCK FACE BEGINS TO MOVE...
I WANT YOU UP THAT RAMP BEFORE THE MERTIANS KNOW WHAT'S HIT THEM...
THE MERCY BATTLE BEGINS...
NOW!
WHAT IN THE STARS... BACK... LIFT THE RAMP!
DEFEND YOURSELF.
WE ARE UNARMED...
OUT OF THE WAY...
MAKE YOUR AIM TELL!
STOP! THIS IS MURDER!
NOT MURDER, POUL... WE COME TO CURE YOU.
YOU DON'T UNDERSTAND...
TROY'S GUN SPITS AND...
IT IS THE END... I AM DEAD!


Pluto
Neptune
Uranus
Interplanetary probe passes Jupiter in 1979 Saturn in 1980, and reaches outermost Pluto in 1985
Saturn
'Grand Tour' probe passes Jupiter in 1981, Uranus in 1985 and Neptune in 1988
Jupiter
Unmanned probe sets off for Jupiter, first planet visited in the 'Grand Tour', 1977.
SPACE
Forward to 1988
Space transport rocket provides regular communication between Earth and Moon. Version shown has a nuclear engine; late 1970's
USA
Mars
Viking landing capsule separates and lands to study soil samples for signs of life
Manned flight to Mars begins from earth orbit, 1981. The ship has a landing capsule for exploring the surface.
Viking spacecraft heads for Mars, 1975.

FIREBALL XL5

Countdown Complete

PEACE MAKERS

Fireball XL5 gives the planet Varso a wide berth—this planet is hostile to all others and is constantly warring despite many attempts to make it see reason. For a thousand years Varso has been torn by internal strife.

SO THAT'S VARSO, STEVE. BRR! IT GIVES ME THE SHIVERS.
THE SOLAR SPACE FEDERATION HAS DECIDED TO LEAVE VARSO WELL ALONE.
STEVE PREPARES TO PUT FIREBALL ONTO A NEW COURSE...
WHAT'S HAPPENING?
SOMETHING'S INTERFERING WITH OUR DIRECTIONAL GEAR.
THERE MUST BE SOME SOLUTION TO THEIR CONSTANT WARRING. THERE MUST BE A CURE SOMEWHERE.
BUT AS VARSO DIMINISHES TO A SPECK IN THE VASTNESS...
ART: BRIAN LEWIS
WHERE ARE WE HEADING, ROBERT?
A SMALL LIFE SUPPORTING PLANET. HAS NO NAME... NUMBER P47839.
FIRE MAIN ROCKET ENGINES, ROBERT!
FIRING MAIN ROCKETS.
WHAT CAN IT MEAN, STEVE?
I DON'T KNOW, VENUS. HELLO, THE CONTROLS HAVE COME ALIVE!
MINUTES LATER XL5 MAKES A SOFT LANDING...
THEY'RE VARSONIANS.
BUT WHAT DO THEY WANT WITH US?
XL5

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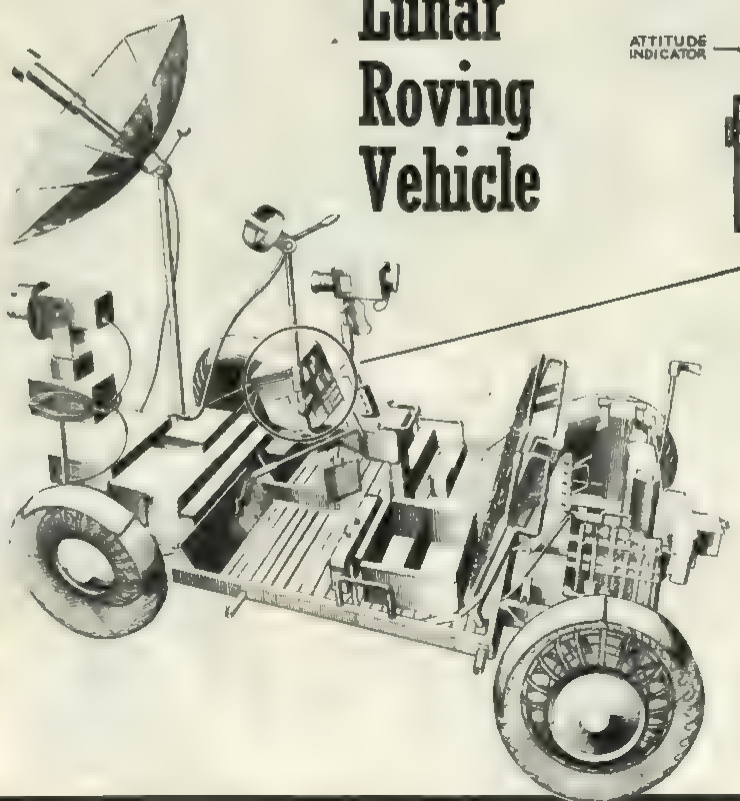
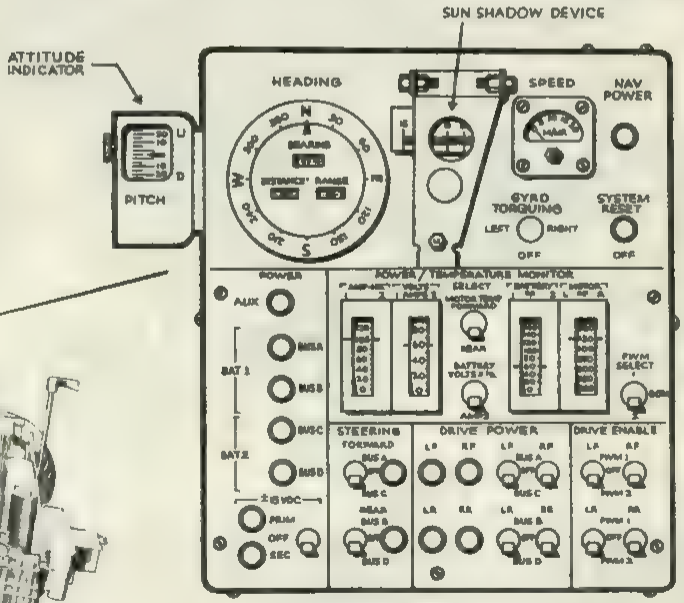
WE KNOW YOUR LANGUAGE, EARTHLINGS. MY NAME IS VARKA
WHY DID YOU BEAM US ON TO THIS DESERTED PLANET AND WHY ARE YOU HERE?
WE ARE STRANDED AND WANT YOUR HELP.
OUR SHIP CRASH LANDED. WE HAVE NO TOOLS. NO SPARE PARTS. YOU WILL REPAIR OUR SHIP.
WHY SHOULD WE HELP A LOT OF GANGSTERS?
THEN YOU LEAVE US. NO ALTERNATIVE BUT TO KILL YOU AND TAKE YOUR SHIP.
BLACKMAIL... BUT YOU HAVE THE ADVANTAGE. LET'S TAKE A LOOK.
LEFT WITH NO ALTERNATIVE, STEVE HAS TO AGREE...
IT WILL TAKE US SEVERAL DAYS.
WHILE STEVE AND MATT SET OUT TO BEGIN THEIR TASK, VENUS SETS OUT TO DO SOME SURVEYING.
MIND HOW YOU GO, VENUS.
THEN BEGIN AT ONCE. I WISH TO RETURN TO VARSO AS SOON AS POSSIBLE, ZODIAC!
UNAWARE THAT SHE IS WATCHED, VENUS TAKES GEOLOGICAL SAMPLES...
SUDDENLY...
WHAT...
NO GOOD STRUGGLING. BUT WHERE ARE THEY TAKING ME?
WE NOT WANT TO RETURN YARSO. SHIP BEING REPAIRED. TAKE GIRL TO STOP REPAIRS.
HE'S NO VARSONIAN...
DID YOU NOW...

LATER THAT DAY, VARKA RECEIVES A MESSAGE...
SO! GIRL IS HOSTAGE TO STOP REPAIRS. NO STOP — NO GIRL. TOO BAD. REPAIRS CONTINUE.
WHAT WAS ALL THAT ABOUT?
NOTHING. HOW LONG REPAIRS TAKE?
BUT THE XL5 COMMANDER IS NOT SATISFIED WITH VARKA'S REPLY.
THERE'S SOMETHING FISHY GOING ON, I'M SURE OF IT.
THERE'S ANOTHER TEN HOURS' WORK. WE'LL TAKE A BREAK NOW.
ON THEIR WAY BACK TO XL5, MATT SPOTS SOMETHING...
SAY, STEVE, WHAT'S THAT LYING OVER THERE?
GREAT EXPLODING METEORS! IT'S VENUS'S SPECIMEN BAG!
BY THE LOOK OF THESE FOOTPRINTS I'D SAY THERE WAS SOME SORT OF SCUFFLE.
SHE'D NEVER JUST DROP IT. SOMETHING'S HAPPENED TO HER, MATT.
WHAT ARE WE WAITING FOR...

Continued on page 5

Lunar Roving Vehicle





Control and Display Console

Roving the Moon

READY for that ride around the moon?

O.K. But first your vehicle —the lunar rover—must be unpacked. It has travelled to the moon folded and tucked away in an equipment bay in the descent stage of the lunar module.

There wasn't room for it inside the landing craft, where it's a pretty tight squeeze for two moon explorers.

Unloading isn't all that difficult, though it takes two astronauts to do it. The main thing is to pull two cords in the right sequence so that the rover can unfold—as shown in the drawing.

Once it's unpacked the check-out and starting up procedure can begin.

SEAT BELTS

You don't have to toss for who drives first. The control console is right between you as you sit side by side in the rover. Either of you can use it.

First task when you're aboard has a ring of familiarity about it. Fasten your seat belts.

After that it becomes a bit more complicated. There's quite a bit to do before you can release the control stick from its backward, parking brake position.

The intrument panel looks a bit complicated—but just work through the manual.

BATTERIES

First turn to the POWER section at the bottom left on the control panel. The buttons there have to be pushed in turn so that power can be drawn from the batteries which drive each of the four wheels.

Still in the same section of the instrument panel is the PWM SELECT switch which activates the pulse width modulators. These send pulses of power to the individual motors which make the wheels go round. Once you're under way you can increase your speed by increasing the width of the pulses.

Don't forget to switch on the navigation system by pushing the NAV POWER circuit breaker at the top right of the control panel. This system needs a little time to warm up.

Next you flick the DRIVE ENABLE switches. No. 1 connects the pulse width modulators to the front wheels, No. 2 to the back.

Then the DRIVE POWER switches are put into position. They equalise the power drain from the batteries.

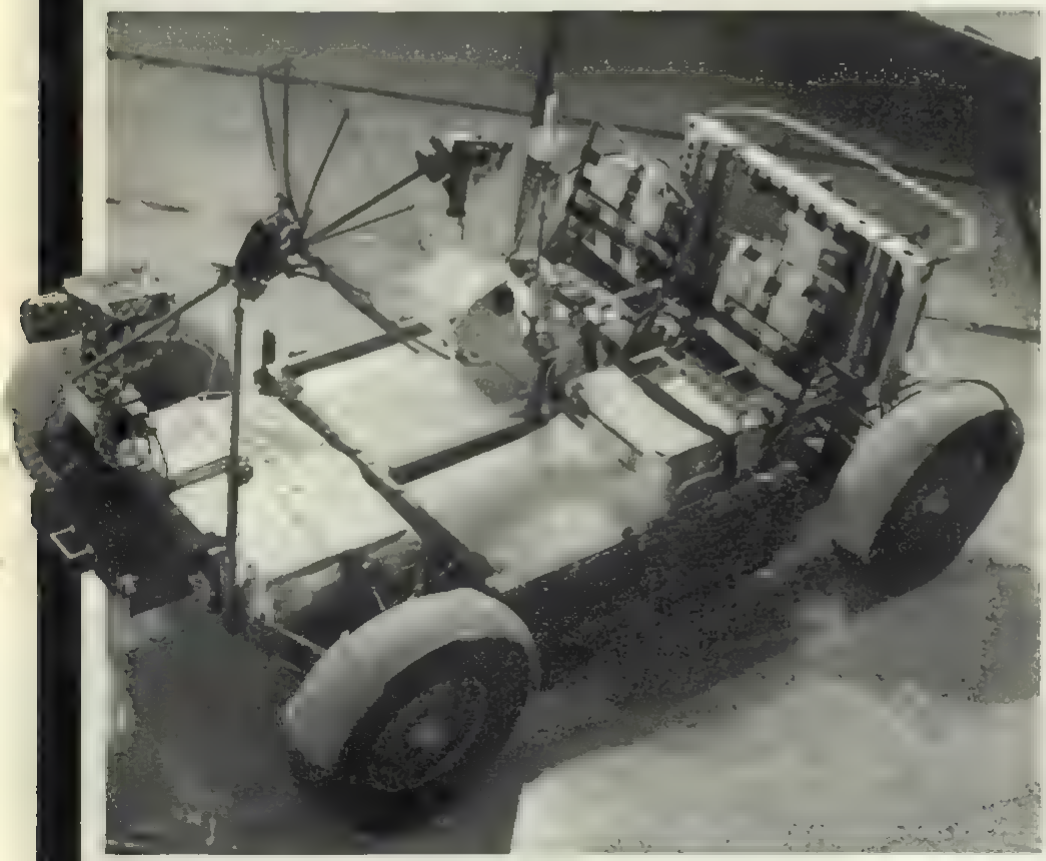
CONTROL STICK

On now to the STEERING section. The switches there must be activated before the front and back wheels will turn when the control stick is pivoted right or left.

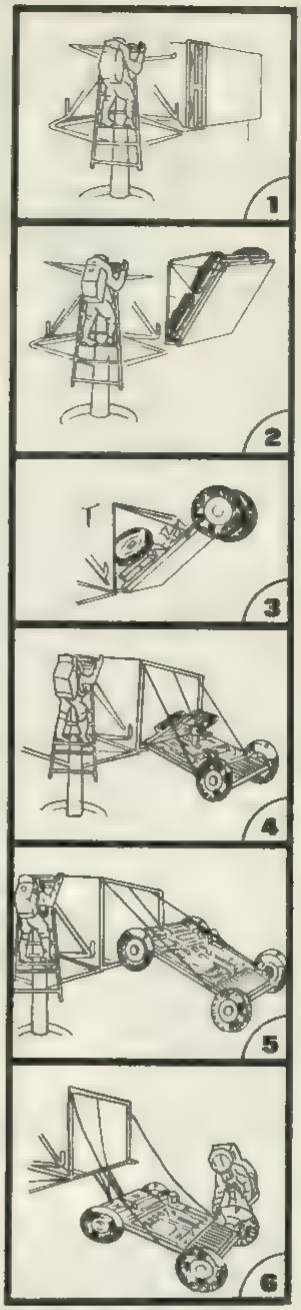
You're nearly there. It's time to release the parking brake. Just move the control stick hard left to disengage it and then push it into neutral—straight up, that is.

Then the last step. Ease the control stick forward and move off gently. To brake, move it back again.

You're ready to explore the moon in a spacecraft on wheels.



NASA photo



Unpacking the Lunar Rover

1 LRV stowed 'nose-down'; Pull D-ring No. 1

2 Spring-loaded rod pushes back end of LRV outward

3 Back end unfolds and rear wheels lock into position

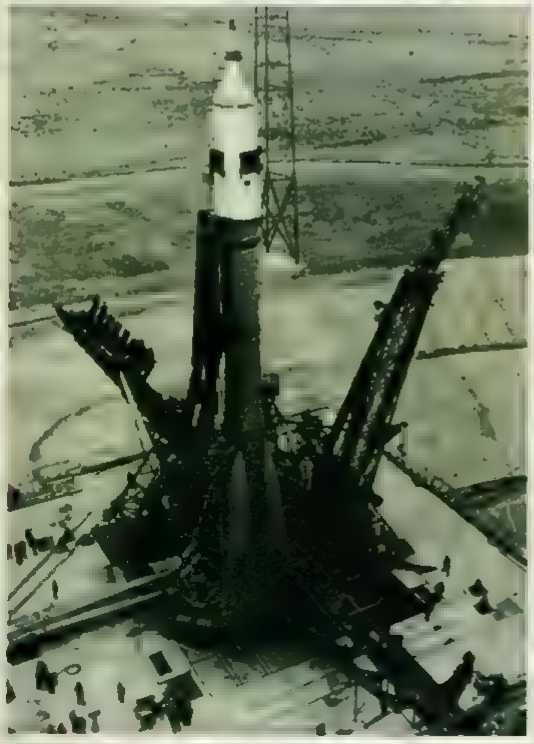
4 Pull D-ring No. 2; rear wheels on surface

5 Front end unfolds; pull D-ring No. 2 again, front wheels touch surface

6 Disconnect tubes and cabling; unfold seats and console; install communications gear

Super mousse
ONE MORNING S.M. RECEIVES AN UNEXPECTED CALLER...
GOOD MORNING MR. MOUSSE I REPRESENT THE SPASM INSURANCE COMPANY. HAVE YOU EVER FELT YOU'RE UNDERCOVERED?
THANKS ALL THE SAME BUT...
MR. MOUSSE, MY COMPANY AND I ARE SO CONCERNED ABOUT PEOPLE LIKE YOU, WE HAVE A WAY OF DEMONSTRATING THE RISKS YOU TAKE.
YOU DO!
SM
LITTLE DOES SUPER MOUSSE REALISE THAT THIS IS PART OF A NEW PLOT BY SPASM, SECRET POLICE ANTI-SUPER MOUSSE...
HE TOOK IT LIKE A BABY, COLONEL.
EXCELLENT. THIS TIME I THINK WE HAVE HIM.
AND SO, SUPER MOUSSE VISITS THE H.Q. OF SPASMIC LTD...
ALL YOU HAVE TO DO IS STAND ON THE MOVING BELT OF OUR ACCIDENT SIMULATOR.
BY THE TIME YOU REACH THE OTHER END I GUARANTEE YOU'LL BE CONVINCED.
O.K. BUT I'M STILL NOT SURE.
A CONTROL IS THROWN...
JUST KEEP LOOKING STRAIGHT AHEAD, MR. MOUSSE.
AND THEN
BOING
SPASM MINCER
THROUGH THE MISTS OF PAIN S.M. CALLS ON THE SUPER-CHARGED POWERS OF SUPER MOUSSE.
YUM! YUM!
TYPE-WRAPPED SUPER CHARGED CHOCOLATE MOUSSE.
COVERED IN REAL CHOCOLATE.
THE SPASM AGENTS WAIT FOR A SUCCESSFUL END TO THEIR MISSION...
CHUG CHUG
ANY MINUTE NOW TINS OF SUPER MOUSSE WILL COME WHISTLING DOWN THIS CHUTE.
OUR MISSION WILL HAVE BEEN ACCOMPLISHED COMRADE COLONEL.
SUDDENLY
WHAT IS HAPPENING?
OUR BEAUTIFUL MACHINE
SOK
BIFF
OUCH!
GET YOURSELF SOME ACCIDENT COVER.
THAT'LL TEACH YOU SPASM SPOOKS TO PLAY WITH SUPER MOUSSE!
S.M. KNOWS THAT THE ONLY INSURANCE POLICY HE NEEDS IS SUPER CHARGED SUPER MOUSSE.
Super mousse
GET SUPER-CHARGED.
2½

Recent Pictures from Russia's Cape Kennedy

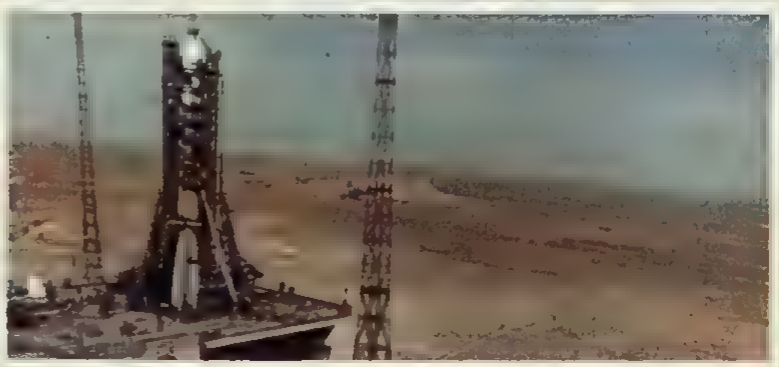


Above: The Venus 1 rocket is readied for launch. The combination of a central core and four boosters forms the standard Russian first stage.

Left: Soyuz 4 reaches the pad by railway transporter is raised hydraulically to vertical position. The servicing gantries are then raised into position about the empty rocket.

Left: Blazing flame from 20 engines, Soyuz 4 climbs into orbit. The grey tanks are covered with white frost at the location of the liquid oxygen tanks.

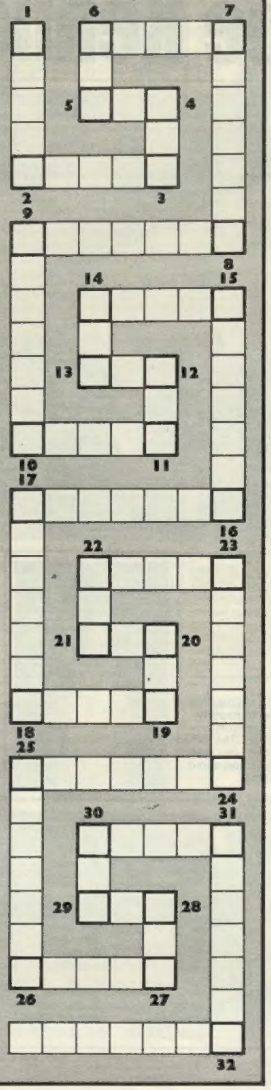
Below: Soyuz 9 on a launch pad at Tyuratam cosmodrome, 150 miles east of the Aral Sea. A concrete flame deflector extends off to the right.



LINK THE WORDS

By solving the first clue, you will see that the final letter falls in a heavy box that must be filled by the first letter of the solution to the second clue, and so on until the chain is completed.

1. What the dentist looks at
2. Place for travellers to stay in
3. Piece of felled tree
4. A jewel
5. Mixture of earth and water
6. Amount owing in a ledger
7. Drinking vessel
8. Sweet after dinner
9. Quiver
10. Keen
11. Line of seats
12. Humour
13. One and one
14. Fruit yielding oil
15. Bright-green precious stone
16. Apparatus for clearing mud from harbour bottom
17. Famous Scottish football team
18. Bladed weapon
19. Animal
20. Firearm
21. Meshed fabric for catching fish
22. Vagabond
23. Useful equipment at top of a rocket
24. Willing to do one's duty
25. Where books are kept
26. Sailing ship
27. Metal
28. Incline one's head
29. Early-morning moisture found on leaves
30. Not right
31. Small anchor
32. Container for light out of doors



ANSWERS:

1. Teeth; 2. Hotel; 3. Log; 4. Gem; 5. Mud; 6. Debit; 7. Tankard; 8. Dessert; 9. Trombio; 10. Eager; 11. Row; 12. Wit; 13. Two; 14. Olive; 15. Emerald; 16. Dredger; 17. Rangers; 18. Sword; 19. Dog; 20. Gun; 21. Net; 22. Tramp; 23. Payload; 24. Dutiful; 25. Library; 26. Yacht; 27. Tin; 28. Nod; 29. Dew; 30. Wrong; 31. Grapnel; 32. Lantern.

Continued from page 9

AAAGH!
BUT SHEER NUMBERS ARE AGAINST HIM.
TAKE THAT!
AT LAST THE VARSONIANS MANAGE TO OVERCOME STEVE...
NOW COME QUIET.
BUT WHERE'S VENUS? WHAT HAVE YOU DONE WITH HER?
WE HAVE GIRL SAFE!
IT SEEMS THAT SINCE THESE THREE VARSONIANS DISCOVERED HARRY'S THEIR WAR-LIKE CHARACTERISTICS HAVE DISAPPEARED.
WHY?
THAT'S WHAT HARRY AND I HAVE BEEN TRYING TO PUZZLE OUT.

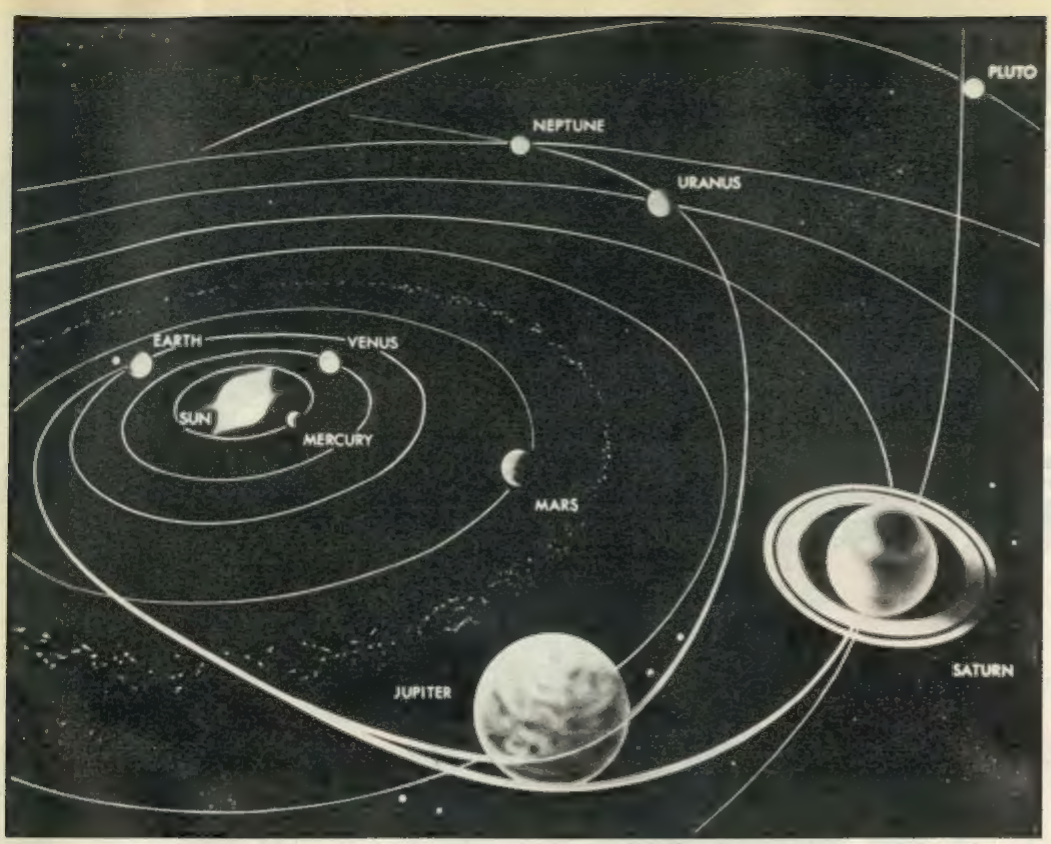
It's time to vote again for . . .

countdown

Here's your chance to tell us exactly what kind of comic you want Countdown to be.
Answer as many questions as you can and send in your vote to: Vote, Polystyle Publications, 382-386 Edgware Road, London W2.

1. My three favourite stories are .....
2. The stories I don't like are .....
3. My three favourite features are .....
4. The features I don't like are .....
5. I want to see more cartoon stories: Yes ☐ No ☐
6. I want to see more features: Yes ☐ No ☐
7. I like to see a cartoon story on the front cover: Yes ☐ No ☐
8. I like five-page complete stories: Yes ☐ No ☐
9. I want to see more competitions: Yes ☐ No ☐
10. I want to see more charts and posters: Yes ☐ No ☐
11. What TV programme do you want to see most in Countdown? .....
12. What feature do you want to see most? .....

DON'T LET'S WASTE TIME. LET'S TALK WITH VARKA.
VARKA NOT AGREE, GIRL STAY HERE. REMEMBER... NO REPAIRS.
WASTE OUR LIVES HERE? WITH THE CHANCE OF POWER AND GREATNESS BACK ON VARSO? NEVER! YOU COMPLETE THE REPAIRS, ZODIAC, OR ELSE!
THE VARSONIAN IS RIGHT. HIS LEADER WILL NOT HEAR OF IT...
BUT WHY CAN'T THEY STAY HERE?
NEED ALL CREW TO ENABLE TAKE-OFF AND LANDING.
THEN WHY DON'T YOU STAY AS WELL?
AS STEVE AND MATT LEAVE VARKA...
STEVE! I'VE FOUND THE ANSWER!
THESE THREE VARSONIANS HAVE BEEN EATING HARRY'S DIET. AND I RECOGNISE THIS PLANT AS HAVING TRACE ELEMENTS THAT ELIMINATE STRESS!
SO WHY NOT INVITE VARKA AND THE OTHERS TO A DIPLOMATIC BANQUET. WE'LL DISH THIS FRUIT UP IN THE MEAL AND...
VARKA AGREES TO A BANQUET THAT EVENING...
I GLAD THAT YOU NOW SEE REASON, ZODIAC.
THERE IS NOTHING TO LOSE... WE'VE REACHED A DEADLOCK AS IT IS.
SURE, WE'LL CONTINUE REPAIRS TO YOUR SHIP AGAIN TOMORROW.
NEXT DAY...
THEN DO WHAT AN EARTHMAN BY THE NAME OF RALEIGH ONCE DID. INTRODUCE HARRY'S VEGETABLE ON VARSO.
A DAY LATER. THE REPAIRED SHIP BLASTS OFF FOR DISTANT VARSO.
LET'S HOPE THAT VEGETABLE IS THE CURE.
WHO KNOWS. WITHIN A COUPLE OF YEARS, THE SPACE FEDERATION MAY HAVE ANOTHER CRACK AT VARSO.
WANT A LIFT ANYWHERE, HARRY?
SOMEHOW THINGS HAVE CHANGED, ZODIAC. VARSO DOES NOT SEEM SO WONDERFUL TODAY. BUT STAY HERE WE CANNOT. OUR FAMILIES.
SURE! THERE'S PLENTY OF SEEDLINGS SUITABLE FOR TRANSPLANTING.
NO THANKS, FOLKS. I LIKE IT HERE.



The Grand Tour

EVERY so often someone comes up with a revolutionary idea that changes the course of space research.

The technique of rendezvous in lunar orbit, which speeded America's plans for a moon landing, was one such idea.

Another, even more staggering in concept, is the Grand Tour of the planets, easily the most ambitious robot space project to date.

The bold idea is to send two unmanned spacecraft to the very edges of the solar system, so that they will "look in" on all five outer planets on the way.

Time required for such a mission: 18 years, under normal conditions. But this is where the Grand Tour planners have been smart. They have figured a way to do it in nine years.

Their project depends on one basic fact: that during the next 20 years the outer planets—Jupiter, Saturn, Uranus, Neptune and Pluto—are lined up in exactly the right position for such a mission.

The attempt must be made around the year 1980, or else the opportunity will be lost. A similar alignment of the outer planets will not happen again for 179 years.

To cut down on the time and rocket power needed, the scientists intend to use the gravitational pull of the planets to give the spacecraft an extra push along the way.

First of the Grand Tour spacecraft should be launched in August, 1977.

A year and a half will pass by before the craft reaches its first target—Jupiter. It will swing around the giant planet and be accelerated by the tremendous gravitational field.

With its extra speed, the probe will cover the vast distance to Saturn in a year and a half, arriving in August, 1980. Once again, it will curve around Saturn, gaining more speed.

Another five years of travel will bring the craft to the vicinity of Pluto. Distance covered on this first mission of the Grand Tour will be 3,700 million miles.

Slightly shorter, at 3,000 million miles, will be the second mission launched in November, 1979. This involves a similar direct flight to Jupiter and a long coast of four years before Uranus comes into view.

After a swing around Uranus, the probe will speed away on the final three-year leg of the tour—reaching Neptune by February, 1988.

The technique of getting a free boost from a planet's gravity field will save so much power that present-day rockets like Saturn 5 or Titan 3C could be used.

But the craft would have to carry a very advanced computer, in the absence of a human crew, capable of making repairs and keeping the communications equipment in good order for up to nine long years.

What do the space scientists hope to learn from the Grand Tour?

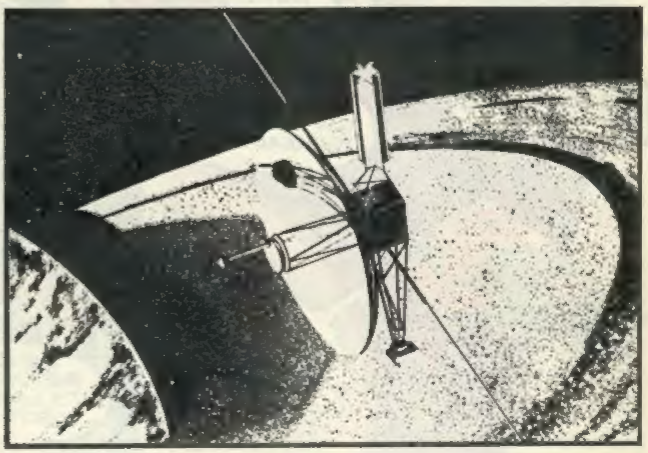
Well, a lot more information on how the solar system was formed. Whether Jupiter is really a planet or a minor star, as some astronomers now think. And clues to the changes that made our own planet habitable.

To say nothing of the prospect of close-up pictures of the distant planets—transmitted back over 3,000 million miles of space!

Top: **The paths to the planets—the Jupiter-Saturn-Pluto trip takes 8 years; the Jupiter-Uranus-Neptune trip takes 9 years.**

Left: **Signals from Grand Tour probes would have to travel enormous distances back to Earth.**

Below: **A probe unravels the secrets of Saturn's rings, August 1980.**



THEY'RE HEADING STRAIGHT FOR US! WHY DIDN'T MOONBASE TAKE CARE OF THEM?
ONE MAN IS NOT IN THE BASE. JACK LEWIS IS RETURNING FROM A SURVEY TRIP . . .
SURVEY 1 TO BASE . . . UFO'S SIGHTED . . . REQUEST INSTRUCTIONS .
JACK . . . KEEP AWAY . . . GET CLEAR !
NEXT SECOND THE FORMATION OF ALIEN SHIPS SWOOPS OVER THE BASE .
ART: GERRY HAYLOCK © 1971 Century 21 M. Ltd.
THEN . . .
AS JACK LEWIS WATCHES IN HORROR, THE UFO'S MAKE ONE ATTACK AFTER ANOTHER .
THEY DIDN'T STAND A CHANCE ! WHY DIDN'T MOONBASE STOP THOSE THINGS BEFORE THEY REACHED MARS ?
ED STRAKER DECIDES ON ACTION . . .
PAUL, GET INTO A LUNAR MODULE AND FIND OUT WHAT'S HAPPENING !
ROGER, CONTROL . . . I'M ON MY WAY . . .
THE SHADO LUNAR MODULE BLASTS OFF . . .
THE TRIP TO MARS IS SWIFT . . .
MODULE TO CONTROL . . . DO YOU READ ME ?
LOUD AND CLEAR, PAUL . . . COMMUNICATIONS ARE OKAY SO FAR .
THE CONTROLS . . . THEY'VE GONE CRAZY . . . IT'S LIKE A GIGANTIC ELECTRICAL STORM . . .
THEN . . .
I'M BEING FORCED AWAY . . . IT'S LIKE BOUNCING OFF A CURVED WALL !
More next week!
countdown at 1
countdown RESUMES NEXT WEEK!